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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Valerie Combaret

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EXAMINER

SALMON, KATHERINE D

ART UNIT

PAPER NUMBER

1634

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DELIVERY MODE

07/21/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,905	Applicant(s) COMBARET ET AL.	
	Examiner KATHERINE SALMON	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/27/2009 has been entered.
2. Claims 10, 12-17 are pending. Claims 1-9 and 11 have been cancelled.
3. Claims 16-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/08/2007.
4. Claims 10 and 12-15 are rejected. Response to arguments follows. It is noted the 35 USC 112/Enablment has been altered to reflect new amendments to the claims.
5. This action is nonfinal.

Withdrawn Rejections

6. The rejection of the claims made under 35 USC 102 made in section 13 of the previous office action (11/25/2008) is moot based upon amendments to the claims.

Interview Summary

7. Applicant's summary of the interview on 4/30/2009 is acknowledged (p. 4 3rd paragraph).

Claim Rejections - 35 USC § 112/Enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 10 and 12-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described by the court in *In re Wands*, 8 USPQ2d 1400 (CA FC 1988). *Wands* states at page 1404,

"Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in *Ex parte Forman*. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims."

Breadth of the claims

Claim 10 is drawn to a method for determining a good or poor prognosis for a

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patient suffering from neuroblastoma comprising extracting biological material from a tumor or bone marrow sample, contacting the sample with a combination of 9 to 37 target genes comprising SEQ ID No. 2, 3, 7, 8, 10, 22, 25, 29, and 34, and determining cluster analysis of the target genes to determine whether the patient has a good or poor prognosis wherein a patient previously clinically classified as good prognosis is a patient diagnosed with a stage 1,2, or 4s neuroblastoma and did not die within 75 months of diagnosis and a patient previous clinically classified as poor prognosis is a patient diagnosed with a stage 4 neuroblastoma or died within a 75 months of diagnosis. Claim 12 define the biological sample as any sample taken from any patient. Claims 13-15 define the support and the reagent.

The claims are drawn, therefore, to determination in any patient good or poor prognosis by determining the expression of 9 to 37 genes compared to patients previously clinically classified as good or poor prognosis.

Nature of the Invention

The invention is in a class of invention which the CAFC has characterized as “the unpredictable arts such as chemistry and biology.” *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316, 1330 (Fed. Cir. 2001).

Teachings in the Specification and working examples

The specification discloses that there are 6 stages of neuroblastma (stage 1, 2a, 2b, 3, 4, and 4S (p. 2 lines 10-25). The specification asserts that prognosis of

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neuroblastoma can be determined by analyzing the expression of target genes selected from 37 genes in Table 1 which are expressed differentially depending on whether the patient has good or poor prognosis (p. 3 lines 20-26).

The claims are drawn to any patient which would include any species including, for example, human, dog, and monkey. However, the instant specification only provides examples of human patients. It would be unpredictable to associate the expression levels observed in one species to any other species, because such correlations cannot be directly extrapolated between species. The skilled artisan would have to perform undue experimentation to determine which levels of expression in any species would be correlative to detection of good or poor prognosis.

Figures 1-5 asserts association of 23 samples of tumors derived from patients with good prognosis or poor prognosis and probe sets from the genes presented in Table 1 (p. 22-23). However the figures do not show which probe sets are correlative to good or poor prognosis.

23 neuroblastoma samples were collected from patients who were 10.5 months old (p. 23 lines 10-15). 12 samples were in stage 1 or 2, 4 in stage 4s and 7 in stage 4 (p. 23 lines 15-18). Therefore no stage 3 tumors were evaluated.

The specification asserts that patients who died during the study and patients with a stage 4 neuroblastoma or patients who died during a period of 75 months were described as patients with poor prognosis (p. 23 lines 23-25). The specification asserts that patients alive and having developed a stage 1, 2, and 4s neuroblastoma were describes as patients with good prognosis (p. 23 lines 23-25). The specification asserts

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that the analysis was carried out on 8 poor prognosis patients and 15 good prognosis patients (p. 23 lines 27-28).

The specification discloses that total RNA was extracted (p. 23 line 30) and cDNA was synthesized (p. 24). The specification discloses that expression of approximately 10000 genes was analyzed between good prognosis and poor prognosis patients using the Affymetrix U95Av2 GeneChip (p. 25 lines 5-30).

The specification asserts that relevant genes which were correlated with a poor neuroblastoma prognosis were selected (p. 26 lines 28-30). The specification discloses a list of 37 genes which were differentially expressed in poor prognosis versus good prognosis samples (Table 2 p. 27-28). However, the claims are directed to 9 specific SEQ ID Numbers out of 37 potential genes which are associated to good or poor prognosis. The skilled artisan would have to perform undue experimentation in order to determine which other 28 genes are correlative to prognosis. This would require undue experimentation as each correlation must be directly examined with no guarantee of success of determining prognosis.

The specification discloses the simultaneous expression of the 37 genes of Table 2 in Figure 1 (p. 32 lines 10-25). The specification discloses the simultaneous expression of the 19 genes of Table 4 in Figure 2 (p. 34). The specification discloses the simultaneous expression of the 16 genes of Table 5 in Figure 3 (p. 35). The specification discloses the simultaneous expression of the 12 genes of Table 6 in Figure 4 (p. 36). The specification discloses the simultaneous expression of the 9 genes of Table 7 in Figure 5 (p. 36). Therefore the specification seems to be asserting a

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correlation of the detection of over or underexpression of 9 genes to prognosis of neuroblastoma in a patient; however, the claims as broadly written encompass any expression level of the combination of sequences.

The instant specification asserts that there are 37 genes that are differentially expressed in good prognosis or poor prognosis patients (p. 27 lines 14-17). The instant specification discloses in table 2 specific Seq id numbers which are increased or decreased. However, this result in the instant specification can not be used as enabling support as the art teaches that such prognosis of neuroblastoma is unpredictable. Ohira et al.(see discussion below) teaches that prognosis depends on the age at diagnosis and the tumor stage. Schramm et al. teaches a similar screening method for prognosis using the same Affymetrix chip used by the instant specification but with no overlapping genes. Therefore Schramm et al. indicates that depending on the genes on the chip different associations are observed. Herein in the instant case depending on the 28 other genes which are tested the skilled artisan would have to determine an association with prognosis. The instant specification has not provided how many or which genes must be correlative in order to determine prognosis.

The claims are directed towards comparing the expression of the patient to known patient samples with stage 1,2, 4s or how did not die within 75 months of diagnosis for good prognosis or patients with stage 4 or who died within 75 months of diagnosis , however, the instant claims are towards a method for determining a good or poor prognosis in any patient. The instant specification has not provided an analysis in which the skilled artisan is provided guidance as to which group a patient with stage 3

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should be placed. Further, the claims seems to be differentiating a patient who did not die within 75 months of diagnosis and a patient who did die within 75 months of diagnosis into poor or good prognosis. Therefore the comparison data required patients to have been diagnosed with stage 1, 2, or 4s and did not die within 75 months of diagnosis. However the expression levels of the genes taken from the sample of the patient are performed at any time. The art (see discussion of Ohira et al) teaches that prognosis is dependent on the age of diagnosis, therefore poor and good prognosis would differ depending on the age of the patient and the stage at which the patient is diagnosed.

The American Heritage College dictionary defines prognosis as "a prediction of the probable course and outcome of a disease", "the likelihood of recovery from a disease"" or "a forecast or prediction". In the instant case detecting and determining would be the same, with regard to the fact the skilled artisan would have to detect the expression levels and determine based on these expression levels rather the patient had good or poor prognosis. Herein in the instant case, the specification has not provided any guidance to determine the prediction, the probable course and outcome of a disease, the likelihood of recovery, or a forecast or prediction of the disease in the patient. Rather, the working example in the specification provides correlations of expression levels at particular stages of disease, guidance has not been provided as to how to extrapolate these expression levels to the prediction the probable course and outcome of a disease, the likelihood of recovery, or a forecast or prediction of the disease in the patient. The art (Ohira et al) teaches that correlations of prognosis and

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expression of particular genes are unpredictable and require multiple testing. Further, the specification provides no guidance with regard to patient in stage 3. As such the instant specification has not provided guidance for the skilled artisan to determine good or poor prognosis based upon detection of expression of the claimed sequences.

The predictability or unpredictability of the art and degree of experimentation

Ohira et al. (Cancer Letters 2005 Vol. 228 p. 5) teaches that poor prognosis of neuroblastoma depends on age at diagnosis and advanced tumor stage (3 or 4) (p. 5 2nd column 1st full sentence). However, no stage 3 tumors were used in the instant study so therefore it is unknown if stage 3 tumors would have the same expression levels for each sequence. The claims are directed towards comparing the expression of the patient to known patient samples with stage 1,2, 4s or how did not die within 75 months of diagnosis for good prognosis or patients with stage 4 or who died within 75 months of diagnosis , however, the instant claims are towards a method for determining a good or poor prognosis in any patient. The instant specification has not provided an analysis in which the skilled artisan is provided guidance as to which group a patient with stage 3 should be placed.

The art teaches associations between expression studies and cancer prognosis are unpredictable and must be reproduced to determine if there is a correlation. Ohira et al. (Cancer Cell April 2005 Vol. 7 p. 337) teaches a method of predicting prognosis of neuroblastoma using cDNA microarray (abstract). Ohira et al. teaches that gene

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expression analyses for cancer prognosis prediction should pay close attention to the reproducibility of obtained results (p. 345 1st column last paragraph). Ohira et al. teaches a complete cross validation analysis without introducing any information leakage and an independent test using new samples are necessary (p. 345 last paragraph). Therefore Ohira et al. exemplify that validation of initial screening results is essential. Here in the instant case it is not clear if any of this analysis was undertaken therefore it is unpredictable whether the results observed are adequate basis for a prognostic too.

Postfiling art, Schramm et al. (Clinical Cancer Research 2007 VOL. 13 p. 1459) teaches generating expression profiles of 47 neuroblastoma patients using Affymetrix U95A chip (abstract). Schramm et al. teaches a table of gene whose correlation was expressed and correlated to neuroblastoma outcome (table 2). Though Schramm et al. teaches the determination of prognosis in the same disease using the same microarray chip, the group of genes Schramm et al. asserts is predictive of prognosis does not overlap the genes asserted by the instant specification. Table 1 of the instant specification lists 37 target genes including SEQ ID No. 2,3, 7,8,10,22,25, 29 and 34 (p. 4 Table 1). The specification asserts that SEQ ID No. 2, 3, 7, 8, 25, and 34 are from genes whose function is known but which have never been related to neuroblastoma (p. 5 lines 1-5). The specification asserts that SEQ ID No. 10, 29 are genes whose function is unknown (p. 5 lines 1-5). Therefore, even in the post filing art, the associations of the specific genes expression in the instant specification and prognosis of neuroblastoma is not observed in a method with similar steps using the same array. Therefore it is

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unpredictable that the gene expression associations observed in the instant specification are reproducible in any neuroblastoma tumor sample based upon the unpredictability in the art and post-filing art which does not observe the same gene associations.

Takita et al. (Genes, Chromosomes and Cancer 2004 Vol. 40 p. 120) teaches detection of early and late stage tumors using DNA microarray analysis. Takita et al. teaches that although 9 of the 13 early stage tumors and 4 of the 6 advanced stage tumors were classified as being in the same cluster the remaining tumors showed different expression profiles (abstract). Takita et al. teaches that both early and advanced stage tumors are heterogeneous in expression (abstract). Therefore Takita et al. teaches that tumor tissue in the same stage can have different expression profiles because of the heterogeneous nature of each tumor stage.

The state of the art teaches that there is a natural variation in gene expression among different individuals and the difficulty in applying gene expression results. The art of Cheung et al (Nature Genetics 2003 Vol. 33 p. 422) teaches that there is natural variation in gene expression among different individuals. Cheung et al teaches an assessment of natural variation of gene expression in lymphoblastoid cells in humans, and analyzes the variation of expression data among individuals and within individuals (replicates) p.422, last paragraph; Fig 1). The data indicates that, for example, expression of *ACTG2* in 35 individuals varied by a factor of 17; and that in expression of the 40 genes with the highest variance ratios, the highest and lowest values differed by a factor of 2.4 or greater (Fig 3).

The unpredictability of correlating gene expression level to any phenotypic quality is taught in the prior art of Wu (Journal of pathology 2001 Vol. 195 p. 53). Wu teaches that gene expression data, such as microarray data, must be interpreted in the context of other biological knowledge, involving various types of 'post genomics' informatics, including gene networks, gene pathways, and gene ontologies (p.53, left col.). The reference indicates that many factors may be influential to the outcome of data analysis, and teaches that expression data can be interpreted in many ways. The conclusions that can be drawn from a given set of data depend heavily on the particular choice of data analysis. Much of the data analysis depends on such low-level considerations as normalization and such basic assumptions as normality (p.63 - Discussion). The prior art of Newton et al (Journal of Computational Biology 2001 Vol. 8 p. 37) further teaches the difficulty in applying gene expression results. Newton et al teaches that a basic statistical problem is determining when the measured differential expression is likely to reflect a real biological shift in gene expression, and replication of data is critical to validation (p.38, third full paragraph).

Amount of Direction or Guidance Provided by the Specification

The specification does not provide guidance to correlate any type of poor or good prognosis by detection of expression of SEQ ID No. 2, 3, 7,8,10,22,25,29, or 34.

The art teaches that associations between gene expression and neuroblastoma is unpredictable and is not predictably reproducible.

The skilled artisan, therefore, would have to perform undue experimentation to determine any prognosis of neuroblastoma by detection of any level of expression of any

of SEQ ID No. 2, 3, 7,8,10,22,25,29, or 34.

Quantity of Experimentation

The quantity of experimentation in this area is extremely large since there is significant number of parameters, which would have to be studied prior to being able to practice the claimed invention as broadly as written.

The skilled artisan would have to determine the correlation of expression to any poor or good prognosis. The skilled artisan would have to reproducibly correlate any expression of any of SEQ ID No. 2, 3, 7, 8, 10, 22, 25, 29, or 34 to type of poor or good prognosis in any patient type.

The art teaches that there is a high degree of unpredictability in associations between expression and prognosis. Post-filing art teaches a different set of genes are correlative to prognosis even though Schramm et al used the same Affymetrix chip it his method.

This would require significant inventive effort, with each of the many intervening steps, upon effective reduction to practice, not providing any guarantee of success in the succeeding steps.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

Case law has established that '(t)o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *In re Wright* 990 F.2d 1557, 1561. *In re*

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Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) it was determined that '(t)he scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art". The amount of guidance needed to enable the invention is related to the amount of knowledge in the art as well as the predictability in the art. Furthermore, the Court in *Genetech Inc. v Novo Nordisk* 42 USPQ2d 1001 held that '(I)t is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of the invention in order to constitute adequate enablement".

In the instant case, the specification does not provide a predictable association of SEQ ID No. 2, 3, 7, 8, 10, 22, 25, 29, or 34 and determination of any poor or good prognosis of neuroblastoma. Further, the art teaches that such correlations are unpredictable and population specific.

Accordingly, in view of the unpredictability in the art, and the lack of disclosure in the specification and in the prior art and the unpredictability of the art, it would require undue experimentation for one of skill in the art to make and use the claimed invention.

Response to arguments

The reply traverses the rejection. A summary of the reply is presented below with response to arguments following.

(A) The reply asserts that the instant claim set has limited the terms good and poor prognosis such that one of skill in the art would be able to categorize a patient (p. 5). The reply summarizes the evidence in the specification (p. 6).

This argument has been fully reviewed but has not been found persuasive.

The claims are drawn to determining a good or poor prognosis for any patient suffering from neuroblastoma. Therefore the claim is drawn to any patient which would include any species. As discussed above, the instant specification has not provided guidance to extrapolate expression in one species to another species. The claims are drawn to detection at all stages; however, the specification only provides guidance on stage 1, 2, 4s, or 4.

The reply asserts that the claims are directed to a method for determining a good or poor prognosis, but does not recite detection of good or poor prognosis (p. 5 1st paragraph). The reply asserts that the dictionary defines prognosis as "a prediction of the probable course and outcome of a disease", "the likelihood of recovery from a disease"" or "a forecast or prediction" (p. 5 1st paragraph). The reply asserts that as such prognosis is something that is determined rather than detected (p. 5 1st paragraph). However, the dictionary term of prognosis still does not provide guidance for the skilled artisan to determine good or poor prognosis. In the instant case detecting and determining would be the same, with regard to the fact the skilled artisan would have to detect the expression levels and determine based on these expression levels rather the patient had good or poor prognosis. Herein in the instant case, the specification has not provided any guidance to determine the prediction the probable course and outcome of a disease, the likelihood of recovery, or a forecast or prediction of the disease in the patient. Rather, the working example in the specification provides correlations of expression levels at particular stages of disease, guidance has not been

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provided as to how to extrapolate these expression levels to the prediction the probable course and outcome of a disease, the likelihood of recovery, or a forecast or prediction of the disease in the patient. The art (Ohira et al) teaches the relationship of prognosis and expression of particular genes are unpredictable and require multiple testing. Further, the specification provides no guidance with regard to patient in stage 3.

(B) The reply asserts that Takita et al. teachings are taken out of context (p. 7 last paragraph). The reply asserts that despite the heterogeneous expression of 17000 genes, Takita et al. was able to identify 60 genes that could be used to differentiate between early stage and advanced stage tumors (p. 7 last paragraph-p. 8 1st paragraph).

This argument has been fully reviewed but has not been found persuasive.

However, as taught by Takita et al. each of these genes must be individually tested and evaluated in replicated studies. Herein in the instant case, the specification has not provided replicated data. Further, the post filing art (Schramm et al.) teaches that using the same starting Affymetrix chip a different group of genes were associated with poor and good prognosis. Lastly, the claims include a group of genes of which only 9 genes are limited to specific structures. Therefore the claims include a multitude of different groupings of genes, each of which would have to be tested and evaluated for their correlation to good and poor prognosis.

(C) The reply asserts that Schramm et al. teaches that “several genome wide mRNA expression profiling studies have identified reliable outcome predictors for neuroblastoma, but with little or no overlap in the decision making genes (p. 8 2nd paragraph). The reply asserts that Schramm et al. teaches that validation by RT-PCR is the gold standard for measuring gene expression and is considered to be the final proof of array data (p. 8 2nd paragraph). The reply asserts that in the instant specification the microarray results were validated using RT-PCR (p. 8 2nd paragraph).

This argument has been fully reviewed but has not been found persuasive.

However, Schramm et al. goes on to further state the technological difference may influence the results of transcriptional profiling but that the primary factor determining variance is biological rather than technological (p. 1459 2nd column). Herein, although the instant specification has validated the microarray results using RT-PCR, neither the instant specification nor the reply has provided evidence that the expression data can be replicated in any individual patient. Further post filing art of Schramm et al. uses the same microarray as is used in the instant specification and did not find any associations between the 9 genes claimed in the instant specification and prognosis. As such the art shows the unpredictability of the claimed association.

Conclusion

9. No claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHERINE SALMON whose telephone number is (571)272-3316. The examiner can normally be reached on Monday-Friday 8AM-530PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James (Doug) Schultz can be reached on (571) 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine Salmon/
Examiner, Art Unit 1634

/Sarae Bausch/
Primary Examiner, Art Unit 1634